SYMONS'S
MONTHLY
METEOROLOGICAL MAGAZINE.

CCCCXII.] MAY, 1900. [PRICE FOURPENCE, *or 5s. per ann. post free.*

METEOROLOGICAL EXTREMES III.—WIND FORCE.

WE have already pointed out the difficulty of collecting the information given in these articles, due to the fact that it is scattered through the records of many observers and of many lands; but great as the difficulties were in the case of pressure and temperature, they are far greater when we come to deal with the present subject.

In the case of wind-force observations no homogeneity exists, either as regards the instruments employed, or the units of the various scales in which results, either instrumental or estimated, are expressed; indeed, as regards instrumental observations, it becomes a most difficult matter to compare satisfactorily, not only the records of anemometers of different kinds, but also those of similar instruments used at different places.

The anemometer which has been most generally used for many years past is the "cup" anemometer, with which is always associated the name of the late Dr. Robinson, of the Armagh Observatory. There have been in use a few pressure-plate instruments, designed by Mr. Osler, and a few other anemometers of various designs, but their total number has always been small.

The cup anemometer consists of a set of four hemispherical cups, placed at the end of a horizontal cross, the centre of which is fixed to a vertical spindle. The greater effective pressure of the wind upon the insides than upon the outsides of the cups causes them to revolve in a horizontal plane, but it is obvious that the resistance of the cups to the wind, as well as the work which has to be done in registering their revolutions, will cause their rate of movement to be always less than that of the wind that drives them. But how much less? is the question on which the value of the results depends.

The answer which Dr. Robinson accepted was that the movement of the cups was always one-third that of the wind; in other words, that the speed of the cups must be multiplied by three to get the speed of the wind,—whence arose the "factor 3."

Since Dr. Robinson's experiments were made, the question has been attacked from the experimental side by many observers in

England, on the Continent, and in America, and the general result may be stated briefly thus: the "factor" depends upon the size of the cups used, and also upon the length of the arms upon which they are placed, but for large instruments, in which the cups are 9 inches in diameter and their centres 4 feet apart, the speed of the cups should be multiplied by 2·2, rather than by 3, in order to get the speed of the wind.

But having determined the true factor, there arises the question: where was the anemometer placed, and was it exposed in such a way that its records may be taken as a true measure of the wind's real strength? These questions involve considerations which appear to have been overlooked by the users of anemometers, and we often find the instruments put quite close to the roofs of big buildings. Occasionally they are stuck up against the thermometer screen in the garden, or in some other "convenient" spot, but seldom indeed are they in a position where they are clear of disturbing influences, and where their indications can be of real value.

But, after all, it is only for a comparatively few places that anemometrical data are available. The great majority of observations of the wind force being made by *estimation*, and for this purpose all sorts of scales are in use. Some consist of 13 points, as the "Beaufort" (0—12), others of more, and the majority of less. In many places only words or descriptive phrases are used, and Mr. S. A. Hill, the Meteorological Reporter for the North-West Provinces, in his account of the Moradabad storm, May, 1888, quotes some cases in which the strength of the wind was expressed as being equal to that of so many elephants, or of so many horses!

From this it will be clear that the task of comparing reports of wind force from widely separated parts of the globe is one of considerable difficulty.

It is a common belief that the strength of the wind in tropical hurricanes much exceeds that experienced in any other part of the world, and there is no doubt that occasionally in the storms, known as cyclones in the West Indies and in the Indian Ocean, as typhoons in the China Seas, and so on,—the wind does attain tremendous power. But so it does upon our exposed western coasts, and we doubt whether the force reached in some of the gales which sweep in from the Atlantic has been much, if at all, exceeded in other regions.

The evil reputation of tropical storms rests upon the *extent* of the damage, rather than upon its *character*, and upon the number of houses or trees overthrown, rather than upon the amount of resistance those obstacles could offer to the wind.

If houses in the Scilly Islands, on the west coast of Ireland, or in the Hebrides were built as they are in the tropics, with open jalousies, large verandas, and other contrivances called for by the climate, but well adapted to give the wind a good hold upon them,

we think their list of damages nearly every winter would be as large as we hear of in many tropical cyclones.

We will now proceed to quote a few instances of exceptional wind force, which, if not the actual maxima on record, are, we believe, amongst the highest.

In April, 1892, a severe hurricane, which did a full quota of mischief, occurred in Mauritius. Fortunately, there is at the Royal Alfred Observatory a cup anemometer exactly similar to that used at Kew Observatory, so that its records can be compared directly with several others. Dr. Meldrum observed the indications of this instrument very closely, and for short periods throughout the storm, and the maximum rate of movement of the wind which he obtained was 88 miles per hour for five minutes; for an entire hour his highest record was 76 miles.*

In January, 1899, a very severe gale was experienced over the Irish Sea and adjoining coasts, and at Southport a rate of 90 miles per hour was recorded in one gust, and rates of between 80 and 90 in several others; gusts of almost equal strength were also reported from Holyhead and Liverpool. The maximum *mean* force of the wind for an hour was 75 miles at Fleetwood, and for half-an-hour, 73 miles at Southport; and these are, we believe, as high as any ever registered by anemometers in our islands.

The comparison of these records with those quoted for Mauritius is interesting, because it supports what we have already said as to the relative strengths of gales here and in the tropics, and is one of the grounds upon which we based our suggestion that we experience wind forces as strong as those which suffice to overturn whole villages of "native houses," and to uproot numbers of quick-growing, but not deep-rooted, trees in tropical lands.

Newspaper reports of storms have generally to be discounted considerably, because of the vivid imaginations of the gentlemen who write them, and especially is this the case when they deal with foreign measures. Thus the "*Times*," reporting a storm experienced in Paris in November, 1890, quoted M. Mascart as responsible for the statement that on the Eiffel Tower the wind had reached a rate of *630 miles per hour!* The account in the "*Comptes Rendus*" is given in metres per second, and puts it more modestly at 76 miles per hour, which is not so high as that reached in the short gusts already quoted for our western coast.

The highest velocity in a gust which we have seen recorded is that registered by Sir Cuthbert Peek, at his Rousdon Observatory in South Devon, in March, 1897, by a Dines' pressure tube anemometer, which amounted to a rate of 101 miles per hour, and is absolutely the strongest gust of which we have any anemometrical record at

* All the velocities quoted here, unless the contrary is expressly stated, are believed to be *true* velocities, got by using the correct factors for the instruments.

present. At Scilly, in the same gale, a rate of but 84 miles was reached, but although this gale was a disastrous one all over the west of England, it was especially remarkable for the amount of damage it wrought in South Devon, and particularly in the valley of the Exe.

The tornados which frequently occur in certain parts of the United States, produce remarkable wind pressures, although it is probable that much of the damage is caused by the lifting effect of the uprush of air in and towards their centres. We have no authentic instrumental records of the wind force in these storms, but we have many accounts of the extraordinary occurrences for which they are so remarkable. Of these the following are quoted by Dr. Wadsworth and Francis Nipher, in their "Enquiry into the Kansas tornado of April 14th, 1879," printed in the Transactions of the St. Louis Academy of Science :—

"At Collinsville, as the result of not far from one minute's work, we find 24 buildings were entirely destroyed, 25 were partially swept away or crushed, and 60 others were more or less injured; one person was killed and seven were wounded. A horse and buggy standing outside a Church at which a funeral was being conducted, was taken up into the air to a height estimated by some who witnessed it, at 50 feet, and was whirled away to a distance of 260 feet, and dashed to the ground. 'On the west front of the Temperance Hall a number of nails were driven in to various depths head first;' and a rafter which was torn from one building, was driven against, and through the walls of another, a considerable distance away." Many other equally remarkable occurrences might be quoted, did our space permit.

Of this class of storm, however, we have had some experience in this country, and accounts of them have appeared from time to time in this Magazine; we will now mention only one which occurred several years ago in the Isle of Wight, by which the whole of the houses on one side of the principal street of Cowes were injured or entirely destroyed. They constitute, however, a special phenomenon, and, perhaps, are not strictly comparable with the cyclonic storms which cover so much larger an area.

Of several Indian cyclones Lord Roberts describes a good example in his "Forty-one Years in India." He says: "Huge branches of trees were being driven through the air like thistle-down." In the morning, when the worst of the storm was over, "The native bazaar was completely wrecked, looking as if it had suffered a furious bombardment, and great havoc had been made amongst the European houses, not a single verandah or outside shutter being left in the station" (Dum-Dum). "I found the road almost impassable from fallen trees; and dead birds, chiefly crows and kites, were so numerous that they had to be carried off in cartloads." This storm occurred in 1852.

There are not, however, so far as we are aware, many very high

anemometrical records of Indian cyclones, and the fact is a remarkable one. For example, in the Madras cyclone of May 1874, in which a great deal of damage was done on sea and land, the maximum velocity reported by the Government Astronomer was only 49 miles per hour! (The "factor" of this instrument we do not know). Yet accounts of the storm speak of "frightful gusts of wind," and of ships dismasted and wrecked. Perhaps the apparent discrepancy would be explained if we knew more about the position of the anemometer? At Calcutta, however, in April, 1870, and again in March, 1877, wind pressures of *40lbs. per square foot were recorded.

We have already spoken of the difficulty there is in putting a proper value upon reports of damage done to buildings in tropical hurricanes, but there can be no doubt as to the intensity of the wind when it is capable of the following feats reported by a West Indian lighthouse keeper, in his official weather report, respecting a hurricane which occurred about twenty years ago, but the exact date of which we are unfortunately not able at the moment to find. A mass of stone, estimated to weigh 25 cwt., was blown inland (how far is not stated), and projecting pieces of rock were torn from the solid mass to which they belonged. A man who ventured to put his head and shoulders out of the lighthouse door had to be held on to by three others to prevent him being blown away.

But here again we have nothing which cannot be matched by somewhat similar occurrences within our own islands. In an account of maximum wind forces some reference ought to be made to De Foe's great storm of 1703,—"*The* Storm" in which in London city alone 21 persons were killed, besides an unknown number who were drowned, and above 200 were much wounded and maimed. The roofs of "the houses were so universally stript, that all the tiles in fifty miles round would be able to repair but a small part of it," and accordingly the price of tiles rose from 21 shillings per 1,000 to six pounds per 1,000. "Seventy trees were blown down in Moorfields and above 100 elms in St. James' Park, some whereof . . . . . were very great trees; about Whitmore House above 200 trees were blown down and some of extraordinary size were broken off in the middle." But the damage wrought by the storm was general all over the South of England, and we will only further quote, for comparison with the note just given respecting the West Indian hurricane, part of the reports of the Rev. Henry Head, vicar of Berkeley in Gloucestershire; and of Mr. Ben Bullivant, of Northampton. The former says: "twenty-six sheets of lead hanging all together were blown off from the middle aisle of our Church, and were carried over the north aisle, which is a very large one, without touching it; and into the churchyard, ten yards distance from the Church; and they were took up all joined together as they were on the roof; the plumber told me that the sheets weighed

* See footnote p. 54.

each three hundred and a half, one with another;" so that the total weight of the mass of lead thus lifted was over four and a half *tons*!

At Northampton, "the weathercock of All-Saints' Church, being placed on a mighty spindle of iron, was bowed together and made useless. Many sheets of lead on that Church rolled up like a scroll. . . . . In Sir Thos. Samwell's park a very great headed elm was blown over the park wall into the road, and yet never touched the wall, being carried some yards."

Such feats, however, could be easily understood if the records of some of our pressure plate anemometers could be accepted as correct. Thus, at the Greenwich Observatory, a pressure of *51½ lbs. on the square foot was recorded on January 18th, 1881, and on December 8th, 1872, "there is reason for thinking that the maximum pressure . . . . . approached *60 lbs. on the square foot." At Liverpool, on March 9th, 1871, the extraordinary pressure of *90 lbs. per square foot was recorded, and a pressure of *80 lbs. per square foot on December 27th, 1868.

We have left ourselves no space to deal with the typhoons of China and Japan; and, indeed, the subject is such a wide one that the limits of a single article will not allow of its being treated in anything like a comprehensive way, but at some subsequent time we may perhaps return to it. In the meantime, we shall be glad if what we have already said leads any of our readers to express their views on the question—What is the strongest force the wind ever attains?

TEMPERATURE AND RAINFALL AT HITCHIN FOR HALF-A-CENTURY.

OUR old correspondent, Mr. Lucas, of Hitchin, whose returns have been published monthly in this Magazine from its commencement in 1866 to the present time, has sent us a summary of his records of temperature and rainfall for the 50 years 1850 to 1899, from which we have compiled the following abstract.

---

* According to Sir Hy. James's formula the velocities corresponding to these pressures would be :—

40	lbs.	= 89	miles	per hour.
51½	,,	= 101	,,	,, ,,
60	,,	= 110	,,	,, ,,
90	,,	= 134	,,	,, ,,

But James's formula is now very generally regarded as inaccurate, and the true velocity equivalents of the pressures quoted are probably :—

40	lbs.	= 115	miles	per hour.
51½	,,	= 131	,,	,, ,,
60	,,	= 142	,,	,, ,,
90	,,	= 173	,,	,, ,,

There is, however, very good reason for believing that in strong winds the records of these pressure-plate anemometers are occasionally much too high; it is scarcely credible that the anemometer could have resisted such a pressure as 90 lbs. per square foot!

Mean Temperature and Rainfall for Fifty Years, 1850–1899, *at Hitchin.*

Month.	Mean Temperature.					Rainfall.				
	Mean.	Highest	Year.	Lowest.	Year.	Mean.	Highest	Year.	Lowest.	Year.
	°	°		°		in.	in.		in.	
Jan....	35·8	42·1	1890	28·1	1881	1·98	4·56	1852	·26	1880
Feb. ..	37·3	45·1	1869	26·5	1895	1·48	3·79	1883	·01	1891
March	39·6	44·8	1893	30·8	1886	1·51	4·14	1864	·24	1850
April .	45·4	50·7	1869	41·1	1879	1·59	3·31	1877	·20	1855
May ..	50·8	56·1	1895	45·9	1877	1·98	4·69	1878	·32	1896
June..	57·5	62·5	1858	54·5	1860 & 1882	1·95	5·22	1879	·42	1868
July ..	60·6	65·3	1859	55·9	1875	2·56	6·24	1875	·10	1885
Aug...	59·9	64·7	1899	55·1	1885	2·38	5·79	1878	·43	1861
Sept. .	55·0	60·5	1865	49·1	1877	2·15	5·85	1896	·26	1890
Oct....	46·3	52·3	1886	42·0	1881	2·70	7·07	1865	·61	1879
Nov...	40·5	46·3	1888	35·0	1851 & 1871	2·35	5·60	1852	·61	1867
Dec. ..	36·8	45·0	1852	27·0	1890	1·89	5·57	1876	·40	1857
Year..	47·1	49·5	1868	43·7	1879	24·52	34·11	1852	17·16	1854 & 1864

It may prove interesting to compare the results of the 50 years at Hitchin with those for the 40 years 1858–1897 at Camden Square, and the most notable fact is that the annual mean temp. at the latter station is 49°·8, or 2°·7 higher than at Hitchin. The difference is fairly uniform throughout the year, as will be seen from the following :—

Excess of Temperature at Camden Square above Hitchin.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean Temp....	2°·3	2°·5	2°·5	2°·7	3°·2	2°·9	2°·7	2°·2	2°·7	3°·5	2°·5	2°·4	2°·7

Taking the mean temperatures for each month for the whole period, we find that the difference varies from 2°·2 for August to 3°·5 for October, and that for the summer six months it is 2°·7, and for the winter six months 2°·6.

Turning now to the individual months with the highest mean

Excess of Temperature at Camden Square above Hitchin.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Highest Month	1°·8	0°·8	1°·5	2°·6	2°·8	4°·0	3°·6	1°·4	3°·1	3°·0	2°·5	1°·0	2°·8

temperature, we must bear in mind the fact that the periods are different, and as a result only in four instances out of the twelve months are the records yielded by the same year. Nevertheless, the differences are less than might be expected, and vary from 0°·8 in February to 4°·0 in June. The average difference for the six summer months is 2°·9, and for the six winter months is 1°·8, which is what would naturally be expected.

In the case of the individual months with the lowest mean temp., the difference of period comes in in precisely the same way, but in seven instances out of the twelve months the records are yielded by the same years. The difference varies from 1°·9 in June to 6°·0 in

Excess of Temperature at Camden Square above Hitchin.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Lowest Month	3°·2	2°·6	6°·0	2°·8	3°·9	1°·9	3°·0	3°·5	5°·0	3°·4	2°·5	3°·0	3°·1

March, and averages for the six summer months 3°·3, and for the six winter months 3°·4, or practically the same amount.

With regard to the rainfall, though the average annual difference is only ·94 in., there is more variation in the monthly averages and in the individual wettest and driest months.

Difference of the Rainfall at Camden Square for 40 *years from that at Hitchin for* 50 *years.*

MONTHLY AVERAGE.

Jan. in.	Feb. in.	Mar. in.	Apr. in.	May. in	June. in.	July. in.	Aug. in.	Sept. in.	Oct. in.	Nov. in.	Dec. in.	Year. in.
+·04	+·13	+·20	+·07	—·06	+·28	—·17	+·01	+·24	+·01	—·05	+·24	+·94

The differences vary from + ·28 in. in June to − ·17 in. in July, and the six summer months show a total excess of ·37 in., and the six winter months an excess of ·57 in.

As regards the months of highest rainfall, although ten instances of wettest months occurred in years common to the period of observation at both stations, in only four instances did the wettest month occur in the same year at both stations. Similarly, though nine

Difference of the Rainfall at Camden Square for 40 *years from that at Hitchin for* 50 *years.*

WETTEST MONTH.

Jan. in.	Feb. in.	Mar. in	Apr. in.	May. in.	June. in.	July. in.	Aug. in.	Sept. in.	Oct. in.	Nov. in	Dec. in.	Year. in.
+·18	—·02	—·45	+1·66	+·10	+1·49	—1·14	+·93	—·34	—·85	—·95	+·68	—·03

DRIEST MONTH.

+·05	·00	+·08	+·04	—·18	—·12	+·35	+·02	+·29	—·05	—·08	—·04	—·23

instances of driest months occurred in years common to both periods of observation, in only three instances did the driest months occur in the same year at both stations.

The wettest months show an excess at Camden Square in the six summer months of 2·70 in., and a deficit of 1·41 in. in the six winter months, while the driest months show an excess of ·40 in. in the six summer months, and a deficit of ·04 in. in the six winter months.

RECORD OF FOG OR HAZE.

To the Editor of the Meteorological Magazine.

SIR,—Considering the importance we most of us attach to a clear sky in choosing our health resorts, it has always struck me as singular that a fog scale analogous to the Beaufort wind scale and the cloud scale has never been adopted.

Speaking from experience (having tried the scale proposed below for some time), I have no hesitation in saying that it is much easier to work with reasonable accuracy, than either of the above, in any country station that commands a view in any direction of 4 miles, and it is especially suitable for sea-side stations. The observer has only to note certain conspicuous features in the landscape, measure their distances on the Ordnance map, and note their visibility at 9 a.m.

Scale.

0. Quite clear, sea horizon sharply defined.
1. Objects visible but not clear at 4 miles and over.
2. ,, ,, over 3 miles but under 4 miles.
3. ,, ,, ,, 2 ,, ,, ,, 3 ,,
4. ,, ,, ,, 1 ,, ,, ,, 2 ,,
5. ,, ,, ,, ½ mile ,, ,, 1 mile.
6. ,, ,, ,, 200 yds. ,, ,, ½ ,,
7. ,, ,, ,, 50 ,, ,, ,, 200 yds.
8. ,, ,, under 50 ,,

Yours truly,
ALFRED O. WALKER.

Ulcombe Place, nr. Maidstone, April 17th, 1900.

A QUESTION OF NOMENCLATURE.

To the Editor of the Meteorological Magazine.

SIR,—What name should properly be given to the five-day periods sometimes used in making up meteorological averages?

In America it seems customary to speak of a "pentad" using "pentads" (Davis *Elementary Meteorology*, p. 62), or "pentades" (*Smithsonian Meteorological Tables*, 1893, p. 232), for the plural.

Bearing in mind the analogy of "decades" one would think, unwittingly, that pentades were five-year instead of five-day periods. Or it might be thought that the name must refer remotely to the presence of nitrogen in the atmosphere. Why not leave the pentad to the chemist, and come back to Τὸ πενθήμερον without offence to Xenophon? Harvey, half a century ago, in the *Encyclopædia Metropolitana*, Art, "Meteorology," p. 45, used "penthemerons." Perhaps, however, there may be good reasons why pentads or pentades are preferable to penthemerons or penthemera.

Yours truly,
J. R. SUTTON.

WARM AND COLD SEASONS.

To the Editor of the Meteorological Magazine.

SIR,—I have read A. B. McDowall's article in the April *Met. Mag.* with interest, *re* London Summers, and although I do not believe in the potency of numbers with regard to similar records of heat or cold, yet the seasons seem to have a curious habit of repetition or recurrence, and I have often noticed that cold winters or springs may be followed by cool summers or autumns, and *vice versâ*. The following record of the past 18 years in a southern county may to some extent confirm this theory :—

Years.	Mean of springs.		Mean of summers.		Mean of autumns.		Mean of winters.	
	Cold.	Hot.	Cold.	Hot.	Cold.	Hot.	Cold.	Hot.
1882.....	...	...	...	...	...	...	...	...
1883.....	...	...	...	...	...	49·5	...	...
1884.....	...	...	...	60·8	...	...	...	40·0
1885.....	43·5	...	58·3	...	45·5	...	...	37·9
1886.....	...	...	58·9	...	...	49·4	33·3	...
1887.....	42·1	...	..	...	44·3	...	33·5	...
1888.....	43·0	...	56·7	...	47·4	...	33·6	...
1889.....	...	...	...	...	47·2	...	35·2	...
1890.....	...	...	56·9	...	47·0	..	...	...
1891.....	42·6	...	57·5	...	47·5	...	30·9	...
1892.....	42·8	...	57·0	...	45·7	...	...	...
1893.....	...	47·9	...	61·0	...	...	...	...
1894.....	...	46·1	...	...	...	49·0	...	...
1895.....	...	47·4	...	61·5	...	50·3	33·2	...
1896.....	...	49·9	...	62·3	...	...	...	39·8
1897.....	...	47·9	...	62·6	...	49·3	...	38·9
1898.....	...	...	...	60·9	...	51·2	...	40·2
1899.....	...	...	...	63·7	...	49·6	...	40·6
Means...	42·8	47·8	57·5	61·8	46·4	49·8	33·3	39·6

Blank spaces equal the average.

The comparison between any of these seasons is striking, especially as regards the averages. The sequence or cycle of years is also worthy of note, the recurrence of heat, cold or average being remarkable.—Yours faithfully,

ARTHUR F. PARBURY.

Chiddingfold, Godalming, Surrey.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, OCTOBER, 1899.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	TotalRain. Depth.	Days.	Aver Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	63·4	1	35·5	8	57·4	42·4	44·4	85	107·7	28·9	2·03	10	4·7
Malta	83·1	1	58·1	11	77·3	65·0	63·8	82	138·6	53·1	2·88	7	3·7
Cape of Good Hope	83·8	23	38·0	10	68·4	51·6	51·2	75	...	...	2·30	8	4·6
Mauritius	80·4	27	60·5	20	77·5	66·0	62·8	78	155·1	53·5	2·25	15	5·7
Calcutta	92·1	4	68·4	18	87·0	73·5	72·5	77	150·7	62·5	3·02	2	4·3
Bombay	93·7	21	74·5	30	88·6	78·4	75·3	77	138·4	62·1	·00	0	2·2
Ceylon, Colombo	93·2	6	72·0	20	88·1	75·6	73·5	81	152·0	70·0	12·99	23	4·9
Melbourne	81·0	31	36·1	1	64·5	46·7	43·9	70	139·8	30·0	3·28	13	5·6
Adelaide	94·1	13	36·9	2	72·6	50·6	42·5	53	154·0	30·9	1·23	12	5·3
Sydney	89·9	9	43·3	2	69·7	53·9	49·0	64	140·0	33·0	3·80	15	4·8
Wellington	68·0	25*a*	39·0	6	60·5	47·6	43·7	68	127·0	27·6	2·52	17	4·3
Auckland	68·0	26	47·6	19	62·9	51·0	46·7	69	126·0	40·0	4·79	22	5·7
Trinidad	93·0	Sev.	67·0	1, 2	91·7	70·5	74·0	86	168·0	66·0	6·34	10	...
Grenada	88·6	3	68·8	9	85·3	75·1	72·6	74	155·4	...	5·68	18	2·5
Toronto	73·7	14	26·7	2	59·3	42·4	46·7	84	88·2	19·8	4·55	15	5·8
New Brunswick, Fredericton	71·3	26	24·3	24	56·4	36·4	34·5	61	...	...	3·15	5	5·3
Manitoba, Winnipeg	73·4	6	18·0	19	52·1	32·3	...	73	...	...	1·85	7	6·6
British Columbia, Esquimalt	...	...	...	...	...	...		...	...	...	...	...	...

a—and 30.

REMARKS.

MALTA.—Adopted mean temp. 70°·0, or 1°·7 above average. Mean hourly velocity of wind 6·6 miles, or 2·5 below average. Mean temp. of sea 74°·0. TS8 on 12th and 13th. L on 8th and 31st. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·9 below, of dew point 0°·9 above, and rainfall ·65 in. above, their respective averages. Mean hourly velocity of wind 9·3 miles, or 1·8 below the average; extremes, 24·4 on 4th, and 1·6 on 18th; prevailing direction, S.E. by E. to E. by N. T. F. CLAXTON.

CEYLON, COLOMBO.—Mean temp. of air 80°·7, or 0°·6 above, of dew point 0°·9 above, and rainfall 1·58 in. below, their respective averages. Mean hourly velocity of wind 8 miles; prevailing directions S.W. and N.W. TS8 on 6 days. L on 8 days. H. O. BARNARD.

Adelaide.—Mean temp. of air 0°·4 below, and R ·56 in. below, their respective averages for 42 years. The temp. during the month was very variable. C. TODD, F.R.S.

Sydney.—Temp. 1°·7 below, humidity 4·7 below, and rainfall ·95 in. above, their respective averages. H. C. RUSSELL, F.R.S.

Wellington.—Fine, but variable; R below average, and fell chiefly at night; prevailing winds N.W., frequently strong. Temp. 0°·4 above, and rainfall 1·85 in. below, their respective averages. R. B. GORE.

Auckland.—Stormy and wet throughout the greater part of the month. Mean temp. slightly below the average. Rainfall 1·50 in. above the average. T. F. CHEESEMAN.

TRINIDAD. Rainfall ·33 in. below the average of 30 years. J. H. HART.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, NOVEMBER, 1899.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	Total Rain. Depth.	Days.	Aver. Cloud
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	61·8	2	29·9	30	53·4	42·3	43·8	87	89·1	25·8	4·13	10	7·5
Malta	76·1	8	49·1	18	68·7	57·7	55·2	80	132·9	44·6	4·65	11	3·9
Cape of Good Hope	91·9	7	48·1	22	73·7	56·0	53·0	67	...	.	·37	5	4·5
Mauritius	83·6	12	64·5	5	81·2	69·6	66·1	75	157·2	55 8	1·73	8	5·6
Calcutta	86·2	1	57·7	30	82·9	61·3	60·6	68	142·2	50·0	·00	0	1·3
Bombay	91·2	30	71·9	12	87·0	73·8	69·6	70	135·9	59·4	·00	0	0·5
Ceylon, Colombo	91·4	13	70·3	11*a*	88·7	74 1	70·1	76	153·0	67·0	8·58	16	..
Melbourne	88·6	1	42·8	16	70·7	51·3	49·0	67	147·5	36·9	2·02	11	6·7
Adelaide	97·2	1	44·9	10	78·7	55·2	47·6	52	163·4	34·9	1·96	11	5·0
Sydney	98·9	28	53·5	1	75·0	59·9	49·2	63	158·5	44·0	5·06	12	5·0
Wellington	74·0	19	38·0	6	62·9	50·0	46·9	70	129·0	29·0	2·25	15	4·4
Auckland	72·0	30	48·0	5	65·0	53·5	50·2	72	136·0	41·0	2·05	15	5·8
Trinidad	92·0	Sev.	68·0	1, 2	89·3	71·7	74·0	82	164·0	69·0	8·07	15	...
Grenada	86·2	3	69·2	1	83·5	74·4	73·9	69	155·0	...	6·03	20	2·7
Toronto	61·8	18	21·6	13	47·0	34·5	35·9	81	72·8	15·8	1·02	13	7·5
New Brunswick, Fredericton	51·8	9	5·1	18	38·9	23·1	23·2	72	...	...	3·38	8	5·6
Manitoba, Winnipeg	60·2	5	18·0	1	42·9	26·5	...	81	...	...	·55	5	6·4
British Colombia, Esquimalt	...	...	...	...	...	...	...	...	...	...	...	...	...

a—and 12.

REMARKS.

MALTA.—Adopted mean temp. 62°·1, or 0°·1 below average. Mean hourly velocity of wind 8·5 miles, or 0·8 below average. Mean temp. of sea 70°·4. TSS on 7 days. L on 5 days. H on 21st. Several water spouts were seen close to this station over sea and land on 13th. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·6 above, of dew point 1°·4 above, and rainfall ·08 in. below, their respective averages. Mean hourly velocity of wind 8·6 miles, or 2·1 below average; extremes, 21·6 on 30th, and 1·8 on 11th; prevailing direction ranging from N.E. by N. to S.E., with occasional N.W. breezes. L on 19th and 29th; L and T on 21st and 22nd. T. F. CLAXTON.

CEYLON, COLOMBO.—Mean temp. of air 80°·0, or 0°·2 above, of dew point 2°·2 below, and rainfall 4·22 in. below, their respective averages. Mean hourly velocity of wind 8·5 miles; prevailing direction N.W. TSS on 22nd, 23rd and 29th. H. O. BARNARD.

Adelaide.—Mean temp. of air just the average, but very changeable throughout the month. Rainfall ·97 in. above the average for 42 years. A marked feature of the month is the very small rainfall on the north coast at Port Darwin, and inland. C. TODD, F.R.S.

Sydney.—Temp. 0°·7 above, humidity 5·8 above, and rainfall 1·94 in. above, their respective averages. H. C. RUSSELL, F.R.S.

Wellington.—On the whole fine, though showery at times, especially during the middle of the month. Prevailing wind N.W., frequently strong. Temp. 0°·1 below, and rainfall 1·92 in. below, their respective averages. R. B. GORE.

Auckland.—A cool, dry, and cloudy month, with no storms of importance or heavy falls of rain. Mean temp. and rainfall considerably below the average. T. F. CHEESEMAN.

TRINIDAD.—R 1·21 in. above the 30 years' average. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, APRIL, 1900.

Div	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
I.	Uxbridge, Harefield Pk..	·68	XI.	Builth, Abergwesyn Vic.	2·93
II.	Dorking, Abinger Hall .	1·11	,,	Rhayader, Nantgwillt ...	2·97
,,	Birchington, Thor	·54	,,	Lake Vyrnwy	2·32
,,	Hailsham	1·56	,,	Corwen, Rhug	1·97
,,	Ryde, Thornbrough	1·26	,,	Criccieth, Talarvor	1·91
,,	Emsworth, Redlands ...	1·44	,,	I. of Anglesey, Lligwy..	·98
,,	Alton, Ashdell	1·43	,,	I. of Man, Douglas	2·79
III.	Oxford, Magdalen Coll..	·83	XII.	Stoneykirk, Ardwell Ho.	2·49
,,	Banbury, Bloxham	·71	,,	New Galloway, Glenlee	3·53
,,	Northampton, Sedgebrook	·82	,,	Moniaive, Maxwelton Ho.	2·52
,,	Alconbury	·76	,,	Lilliesleaf, Riddell	2·46
,,	Wisbech, Bank House...	1·25	XIII.	N. Esk Res. [Penicuick]	2·65
IV.	Southend	·64	XIV.	Glasgow, Queen's Park..	2·14
,,	Colchester, Lexden	·90	XV.	Inverary, Newtown	5·30
,,	Saffron Waldon, Newport	·90	,,	Ballachulish, Ardsheal...	5·30
,,	Rendlesham Hall	1·12	,,	Islay	3·81
,,	Scole Rectory	...	XVI.	Dollar.....	2·35
,,	Swaffham	1·24	,,	Balquhidder, Stronvar...	4·70
V.	Salisbury, Alderbury ...	1·68	,,	Coupar Angus Station...	1·85
,,	Bishop's Cannings	2·30	,,	Blair Atholl	2·38
,,	Blandford, Whatcombe .	1·56	XVII.	Keith H.R.S.....	2·17
,,	Ashburton, Holne Vic...	1·88	,,	Forres H.R.S.	1·65
,,	Okehampton, Oaklands.	1·86	XVIII.	Fearn, Lower Pitkerrie..	1·68
,,	Hartland Abbey	1·77	,,	S. Uist, Askernish	2·91
,,	Lynton, Glenthorne ...	1·75	,,	Invergarry.....	2·19
,,	Probus, Lamellyn	2·12	,,	Aviemore, Alvie Manse.	2·79
,,	Wellington, The Avenue	1·10	,,	Loch Ness, Drumnadrochit	3·07
,,	North Cadbury Rectory	2·52	XIX.	Invershin	3·87
VI.	Clifton, Pembroke Road	1·23	,,	Durness.....	4·46
,,	Ross, The Graig	1·06	,,	Watten H.R.S.....	1·63
,,	Wem, Clive Vicarage ...	·89	XX.	Dunmanway, Coolkelure	4·13
,,	Wolverhampton, Tettenhall	·77	,,	Cork, Wellesley Terrace	1·55
,,	Cheadle, The Heath Ho.	1·78	,,	Killarney, Woodlawn ..	3·27
,,	Coventry, Priory Row ..	1·27	,,	Caher, Duneske	2·28
VII.	Market Overton	·97	,,	Ballingarry, Hazelfort...	2·00
,,	Grantham, Stainby	·65	,,	Limerick, Kilcornan ...	...
,,	Horncastle, Bucknall ...	1·54	,,	Miltown Malbay	3 78
,,	Worksop, Hodsck Priory	1·14	XXI.	Gorey, Courtown House	1·28
VIII.	Neston, Hinderton	1·08	,,	Moynalty, Westland ...	2·59
,,	Southport, Hesketh Park	1·51	,,	Athlone, Twyford	2·60
,,	Chatburn, Middlewood.	3·14	,,	Mullingar, Belvedere ...	3·02
,,	Duddon Val., Seathwaite Vic.	5·22	XXII.	Woodlawn	2·89
IX.	Melmerby, Baldersby ...	1·36	,,	Crossmolina, Enniscoe ..	3·84
,,	Scalby, Silverdale	1·39	,,	Collooney, Markree Obs.	2·97
,,	Ingleby Greenhow Vic..	1·14	XXIII.	Enniskillen, Model Sch.	...
,,	Middleton, Mickleton ...	2·79	,,	Warrenpoint.....	1·48
X.	Haltwhistle, Unthank H.	2·78	,,	Seaforde.....	2·81
,,	Bamburgh	1·50	,,	Belfast, Springfield	3·98
,,	Keswick, The Bank	3·01	,,	Bushmills, Dundarave..	3·15
XI.	Llanfrechfa Grange	1·42	,,	Stewartstown	3·02
,,	Llandovery	2·25	,,	Killybegs	3·64
,,	Castle Malgwyn	1·69	,,	Horn Head	2·80
,,	Brecknock, The Barracks	...			

APRIL, 1900.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Date	Days on which '01 or more fell.	TEMPERATURE. Max. Deg.	Date	Min. Deg.	Date.	No. of Nights below 32°. In shade.	On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	·98	— ·76	·36	3	15	76·4	21	25·1	2	5	13
II.		Tenterden ...	·82	— ·90	·30	3	11	75·0	22	26·0	1	4	13
,,		Hartley Wintney ...	1·11	...	·25	3	15	77·0	21	26·0	1	7	9
III.		Hitchin ...	1·43	— ·36	·33	3	11	75·0	21	25·0	1*c*	5	...
,,		Winslow (Addington) ...	·55	— 1·37	·28	3	11	75·0	21*a*	24·0	2*d*	8	13
IV.		Bury St. Edmunds (Westley)	1·45	— ·21	·48	5	13	68·0	21	27·0	1	...	...
,,		Norwich (Brundall) ...	1·30	...	·30	16	15	75·4	21	28·0	1	4	13
V.		Winterbourne Steepleton ...	1·77	...	·74	3	13	69·9	22	24·7	1	6	15
,,		Torquay (Cary Green)	1·19	...	·33	3	11	63·4	22	34·2	1, 2	0	8
,,		Polapit Tamar [Launceston]..	1·55	— ·67	·38	30	14	69·0	21	27·8	27	6	10
VI.		Stroud (Upfield) ...	1·05	— 1·10	·27	3	17	69·0	21	34·0	5*e*	0	...
,,		ChurchStretton(Woolstaston)	1·69	— ·65	·31	3	15	73·0	21	29·5	26	3	10
,,		Worcester (Diglis Lock) ...	·99	— ·72	·30	30	13	...	...	...	...	...	...
VII.		Boston ...	1·37	— ·34	·52	5	9	75·0	20	27·0	2	6	...
,,		Hesley Hall [Tickhill]...	·79	— ·92	·27	16	9	76·0	21	25·0	2	7	...
,,		Breadsall Priory ...	1·75	...	·60	28	13	...	..	...	...	...	...
VIII.		Manchester(PlymouthGrove)	2·50	+ ·79	·53	11	16	75·0	21	28·0	1	5	6
IX.		Wetherby (Ribston Hall) ...	1·49	— ·36	·44	12	12	...	...	...	...	...	...
,,		Skipton (Arncliffe) ...	5·38	+ 1·95	1·68	12	18	...	...	...	...	...	...
,,		Hull (Pearson Park).	1·08	— ·84	·19	3	12	75·0	21	23·0	1	6	10
X.		Newcastle (Town Moor) ...	1·36	— ·47	·25	3	11	...	...	...	...	...	...
,,		Borrowdale (Seathwaite)...	8·58	+ 1·44	2·15	11	18	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely)...	1·95	— ·46	·64	6	14	...	...	...	...	...	...
,,		Haverfordwest ...	2·07	— ·56	·48	3	17	69·0	21	28·3	6	2	12
,,		Aberystwith (Gogerddan) ...	2·41	— ·15	·41	3, 10	14	75·0	20	20·0	1	12	...
,,		Llandudno... ...	1·61	— ·20	·44	11	16	69·0	20	34·5	26	0	..
XII.	SCOTLAND.	Cargen [Dumfries]	...	...	...	...	...	...	...	...	...	..	...
XIII.		Edinburgh (Blacket Place)...	1·35	...	·46	12	13	71·9	20	30·2	2	3	6
XIV.		Colmonell	3·11	...	·46	3	18	73·0	21	27·0	2	...	...
XV.		Tighnabruaich	4·04	...	·94	12	15	63·0	21	30·0	5, 7	3	...
,,		Mull (Quinish)...	3·86	+ ·88	·47	14	24	...	...	...	...	...	...
XVI.		Loch Leven Sluices ...	2·50	+ ·28	·80	13	9	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	1·45	— ·60	·30	3	17	71·4	20	29·4	2	5	...
XVII.		Braemar	1·46	— ·96	·25	15	17	65·8	20	24·7	7	12	24
,,		Aberdeen (Cranford)	1·82	...	·38	3	21	73·0	20	28·0	1*c*	...	...
,,		Cawdor (Budgate) ...	2·38	+ ·86	·31	2	18	...	..	...	...	...	...
XVIII		Strathconan [Beauly] ...	5·01	+ 2·20	·85	29	10	..	...	...	...	...	...
,,		Glencarron Lodge...	9·48	...	1·30	28	26	64·0	20	29·0	8	4	...
XIX.		Dunrobin ...	2·95	+ 1·22	·35	13	19	68·0	20	32·0	1, 2	2	...
,,		S. Ronaldshay (Roeberry) ...	2·20	+ ·59	·39	14	22	62·0	20	32·0	3	1	...
XX.	IRELAND.	Darrynane Abbey...	3·30	...	·47	2	18	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	1·98	— ·49	·32	29	15	64·0	22	31·0	6	1	...
,,		Broadford (Hurdlestown) ...	2·04	...	·38	5	19	...	...	...	...	...	...
XXI.		Carlow (Browne's Hill) ...	2·56	+ ·28	·69	6	16	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	1·30	— ·82	·20	3	16	70·7	21	35·9	8	0	2
XXII.		Ballinasloe	2·60	+ ·26	·40	3	15	65·0	19*b*	36·0	1	0	...
,,		Clifden (Kylemore)	5·23	...	·78	28	18	...	...	...	...	...	...
XXIII		Waringstown ...	2·53	+ ·11	·35	8	14	75·0	22	27·0	8	5	9
,,		Londonderry (Creggan Res.).	2·57	+ ·33	·35	3	22	...	...	...	...	...	...
,,		Omagh (Edenfel) ...	2·76	+ ·53	·49	11	19	70·0	20	29·0	25	3	5

+ Shows that the fall was above the average ; — that it was below it.

a—and 22. *b*—and 20. *c*—and 25. *d*—and 26. *e*—and 27.

METEOROLOGICAL NOTES ON APRIL, 1900.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

LONDON, CAMDEN SQUARE.—A warm period occurred from the 18th to the 24th, the mean of the 9 a.m., 9 p.m. max. and min. temp. for each of the seven days being :—

18th.	19th.	20th.	21st.	22nd.	23rd.	24th.
53°·4	55°·4	55°·2	59°·9	61°·8	52°·4	51°·5

while the mean for 40 years is 48°·1. The highest 9 a.m. reading (64°·6 on 22nd) has been exceeded in 4 Aprils in 40 years; the highest 9 p.m. reading (62°·1 on 22nd) has been exceeded in three Aprils; the highest max. (76°·4 on 21st) has been exceeded in 8 Aprils, and the highest min. (47°·3 on 19th) has been repeatedly exceeded.

TENTERDEN.—Generally cold, except in the third week. Very warm from the 20th to the 22nd, but the max. temp. on 25th was 27° lower than that on 22nd. The latter part of the month was dry. High winds blew from S.W. on 11th and 12th, W. on 13th and N.W. on 16th. T and slight H at 4 p.m. on 16th. Duration of sunshine 178 hours.

HARTLEY WINTNEY.—Until the 18th the weather was bitterly cold with dull days and showers from N.W.; a terrible W. wind blew on 14th, 15th and 16th. A sudden burst of heat occurred on 20th and lasted till the 22nd, with a max. temp., in shade, of 77°. Total R ·18 in. below the average. Distant T on 5th. Ozone on 16 days with a mean of 4·2. Vegetation very backward. Nightingale heard on 15th, cuckoo on 16th, and swallow seen on 18th.

WINSLOW, ADDINGTON.—The least R in April in 30 years, with the exception of 1893, when only ·11 in. fell on 3 days. The max. temp. was rather high from 19th to 22nd, but frost on the morning of the 26th did much damage to fruit blossom and seedling plants. Very high winds blew from 11th to 13th. Swallows arrived on 16th.

BURY ST. EDMUNDS, WESTLEY.—A nice spring month with the exception of the 1st. 13th and 25th. Very little R fell after the 5th. Very high wind occurred on 13th and much damage was done on light lands by blowing sand. The 21st and 22nd were very hot, but sharp frost occurred on 26th. T on 4th and 5th.

NORWICH, BRUNDALL.—A month of many extremes; on 1st the shade temp. fell to 28°·0, and on 21st it rose to 75°·4, this being the warmest April day since 1892. On the 5th occurred the most severe TS for some years, lasting from 11.50 a.m. to nearly 4 p.m., with great darkness; Brundall only caught the fringe of it, but in some parts of Norwich more than an inch of R fell. T and L on 4th and 16th, and L also on 3rd. Large flakes of S on 2nd.

WINTERBOURNE STEEPLETON.—The weather on the whole was cold and ungenial. The R in the early part was accompanied by much wind and squally weather and in the latter part, although brighter, the nights were mostly frosty. It was therefore not a "growing" time. Mean temp. 45°·6.

TORQUAY, CARY GREEN.—R 1·19 in. below the average. Mean temp. 48°·5 or 0°·3 above the average. Duration of sunshine 195 hours 30 mins., being 18 hours 50 mins. above the average; one sunless day. Mean amount of ozone 5·3; greatest 8·0 on 17th with a W.S.W. wind, and least, 2·0 on 11th also with W.S.W. wind.

POLAPIT TAMAR [LAUNCESTON].—A rather cold and dry month. From the 12th to the 28th, inclusive, was particularly dry, only ·07 in. of R falling. Morning fogs on 8th, 17th, 18th, and from 22nd to 25th. H on 5th. R for the first 4 months of the year 3·95 in. above the average.

WOOLSTASTON.—The early part of the month was cold and backward but towards the middle it became very warm. Strong gale on 11th and 12th. T on 23rd. Violent H storms on 5th. Mean temp. 47°·8.

BREADSALL PRIORY.—A cold month and everything very backward.

WALES.

HAVERFORDWEST.—A cold and somewhat stormy month, with a small amount of bright sunshine and low night temp.; though some of the day readings were high. Vegetation generally very backward, but fruit trees promise good crops, and agricultural operations are well advanced. Swallows were seen on 11th. Blackthorn in bloom and cuckoo heard on 18th.

ABERYSTWITH, GOGERDDAN.—A very changeable month; for a few days it was more like July than April, but the nights were cold.

SCOTLAND.

EDINBURGH, BLACKET PLACE.—R 35 per cent. below the average. Mean temp. 1°·5 above, and duration of sunshine 17 hours above, the average.

COLMONELL.—R ·63 in. above, and mean temp. 2°·0 above, the average for 24 years. Gales on 12th, 14th and 15th.

TIGHNABRUAICH, CRAIGANDARAICH.—A splendid spring month, with R, heat and sunshine in proper proportions.

S. RONALDSHAY, ROEBERRY.—A cold, wet month. Mean temp. 42°·1, or 1°·5 below the average of 10 years.

IRELAND.

DARRYNANE ABBEY.—The first half of the month was wet and cold; the remainder was fine and warm, with some really hot days. Vegetation very backward, but improving towards the close. H on 4th, 5th and 15th.

WATERFORD, BROOK LODGE.—Mean temp. 48°·4. Heavy H on 4th and 6th. A pair of swallows seen on 22nd, and cuckoo heard on 26th.

BROADFORD, HURDLESTOWN.—R ·13 in. below, and rainy days 2 above, the average for 15 years.

DUBLIN, FITZWILLIAM SQUARE.—A favourable, springlike month. At times changeable, cloudy and showery, but on the whole warmer than usual, and with a moderate rainfall. Mean temp. 50°·1, or 2°·4 above the average. Fog on 3 days. High winds on 9 days, reaching the force of a gale on 4 days. H on 3 days. The shade temp. reached 60° on 7 days, and on 2 failed to reach 50°. Solar halo on 1st, and L on 1st.

OMAGH, EDENFEL.—Wet and somewhat raw until the 17th, but not repressive of vegetation; thence till 24th a summer-like spell reaching a max. of 70° on 20th, a temp. only twice before recorded in April in (at least) 35 years, viz.; in 1875 and 1893. The remainder of the month was dry and cool. Swallows on 19th; land-rail on 30th.